

INTERNATIONAL SEARCH REPORT

 International Application No.
 PCT/US2004/043474

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C07D471/14 C07D471/22 A61K31/551 A61P31/12 A61P35/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07D A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, BEILSTEIN Data, CHEM ABS Data, BIOSIS, EMBASE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 96/21663 A (MINNESOTA MINING AND MANUFACTURING COMPANY) 18 July 1996 (1996-07-18) Formula II, page 13, lines 17-22; claims 1,8; example 3	1-27
A	WO 02/46194 A (3M INNOVATIVE PROPERTIES COMPANY; LINDSTROM, KYLE J) 13 June 2002 (2002-06-13) Formula I, page 25, lines 1-14	1-27
A	US 6 541 485 B1 (CROOKS STEPHEN L ET AL) 1 April 2003 (2003-04-01) Formula I, column 14, line 38 - column 16, line 32	1-27
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
 "E" earlier document but published on or after the international filing date
 "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
 "O" document referring to an oral disclosure, use, exhibition or other means
 "P" document published prior to the international filing date but later than the priority date claimed

- "I" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
 "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
 "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
 "&" document member of the same patent family

Date of the actual completion of the international search

13 June 2005

Date of mailing of the international search report

20/06/2005

Name and mailing address of the ISA

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 95/02597 A (MINNESOTA MINING AND MANUFACTURING COMPANY) 26 January 1995 (1995-01-26) Formula I, page 13, lines 5-20 _____	1-27
A	WO 99/18105 A (ORTHO-MCNEIL PHARMACEUTICAL, INC) 15 April 1999 (1999-04-15) Formula I, page 3, lines 26-35 _____	1-27

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Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
Although claims 25-27 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US2004/043474

Patent document cited in search report	Publication date	Patent family member(s)	Publication date	
WO 9621663	A	18-07-1996	US 5482936 A AT 192153 T AU 692033 B2 AU 4374396 A CA 2209487 A1 CN 1173178 A ,C CZ 9702204 A3 DE 69516540 D1 DE 69516540 T2 DK 802913 T3 EP 0802913 A1 ES 2145318 T3 FI 972967 A GR 3033869 T3 HU 77667 A2 IL 116566 A JP 10512256 T NO 972801 A NO 3198 A NZ 298296 A PT 802913 T SK 87297 A3 WO 9621663 A1 ZA 9600101 A	09-01-1996 15-05-2000 28-05-1998 31-07-1996 18-07-1996 11-02-1998 17-12-1997 31-05-2000 10-08-2000 25-09-2000 29-10-1997 01-07-2000 11-07-1997 31-10-2000 28-07-1998 30-10-1998 24-11-1998 19-08-1997 19-08-1997 29-11-1999 29-09-2000 10-12-1997 18-07-1996 08-07-1997
WO 0246194	A	13-06-2002	AU 3954702 A BR 0116034 A CA 2431040 A1 CN 1478090 A CZ 20031593 A3 EE 200300273 A EP 1343783 A2 HR 20030465 A2 JP 2004525868 T MX PA03005013 A NO 20032453 A NZ 526085 A PL 365739 A1 SK 7142003 A3 WO 0246194 A2 US 2002107262 A1 US 6525064 B1 US 6545016 B1 US 6545017 B1 US 2004019076 A1 US 2003186949 A1 US 2003195209 A1 US 2003162806 A1 US 2003176458 A1 US 2004147533 A1 US 2004157879 A1 US 2004186128 A1 ZA 200305238 A	18-06-2002 03-08-2004 13-06-2002 25-02-2004 14-01-2004 16-02-2004 17-09-2003 30-06-2004 26-08-2004 05-09-2003 16-07-2003 24-12-2004 10-01-2005 07-10-2003 13-06-2002 08-08-2002 25-02-2003 08-04-2003 08-04-2003 29-01-2004 02-10-2003 16-10-2003 28-08-2003 18-09-2003 29-07-2004 12-08-2004 23-09-2004 27-08-2004
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US2004/043474

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			AU 7247594 A	13-02-1995
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			CZ 9600105 A3	12-06-1996
			CZ 291419 B6	12-03-2003
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Information on patent family members

International Application No

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			WO 9918105 A1	15-04-1999
			US 5968946 A	19-10-1999

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

REC'D 16 JUN 2005

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To:

see form PCT/ISA/220

21/4

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/US2004/043474

International filing date (day/month/year)
22.12.2004

Priority date (day/month/year)
29.12.2003

International Patent Classification (IPC) or both national classification and IPC
C07D471/14, C07D471/22, A61K31/551, A61P31/12, A61P35/00

Applicant
3M INNOVATIVE PROPERTIES COMPANY

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

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Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

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Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application,
- ☒ claims Nos. 25-27 with respect to industrial applicability

because:

- ☒ the said international application, or the said claims Nos. 25-27 with respect to industrial applicability relate to the following subject matter which does not require an international preliminary examination (*specify*):

see separate sheet

- ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
- ☐ no international search report has been established for the whole application or for said claims Nos.
- ☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:
 - the written form ☐ has not been furnished
 - ☐ does not comply with the standard
 - the computer readable form ☐ has not been furnished
 - ☐ does not comply with the standard
- ☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.
- ☐ See separate sheet for further details

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims 1-27 No: Claims
Inventive step (IS)	Yes: Claims 1-27 No: Claims
Industrial applicability (IA)	Yes: Claims 1-24 No: Claims

2. Citations and explanations

see separate sheet

Re Item III.

Claims 25-27 relate to subject-matter considered by this Authority to be covered by the provisions of Rule 67.1(iv) PCT. Consequently, no opinion will be formulated with respect to the industrial applicability of the subject-matter of these claims (Article 34(4)(a)(I) PCT).

Re Item V.

Reference is made to the following documents:

- D1 : WO 96/21663 A (MINNESOTA MINING AND MANUFACTURING COMPANY)
18 July 1996 (1996-07-18)
- D2 : WO 02/46194 A (3M INNOVATIVE PROPERTIES COMPANY; LINDSTROM,
KYLE J) 13 June 2002 (2002-06-13)
- D3 : US 6 541 485 B1 (CROOKS STEPHEN L ET AL) 1 April 2003 (2003-04-01)
- D4 : WO 95/02597 A (MINNESOTA MINING AND MANUFACTURING COMPANY)
26 January 1995 (1995-01-26)
- D5 : WO 99/18105 A (ORTHO-MCNEIL PHARMACEUTICAL, INC) 15 April 1999
(1999-04-15)

The present invention relates to imidazopyridines and imidazoquinolines which are further fused with a diaza-heterocycle, and the use thereof as antiviral agents and for treatment of cancer.

The prior art describes a number of structurally related imidazopyridines and imidazoquinolines for the treatment of viral infections and cancer (D1-D4). None of the prior art documents discloses or suggests diaza-heterocycle-fused imidazopyridines or imidazoquinolines. The claimed subject matter is therefore considered novel and non-obvious over the cited prior art.

For the assessment of the present claims 25-27 on the question whether they are industrially applicable, no unified criteria exist in the PCT Contracting States. The

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

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patentability can also be dependent upon the formulation of the claims. The EPO, for example, does not recognize as industrially applicable the subject-matter of claims to the use of a compound in medical treatment, but may allow, however, claims to a known compound for first use in medical treatment and the use of such a compound for the manufacture of a medicament for a new medical treatment.